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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,722	04/24/2007	William G. Skene	BRKP:029US/10610231	5400
33425 7590 01/14/2011 FULBRIGHT & JAWORSKI L.L.P. 600 CONGRESS AVE. SUITE 2400 AUSTIN, TX 78701				
EXAMINER				
FANG, SHANE				
ART UNIT		PAPER NUMBER		
1766				
NOTIFICATION DATE		DELIVERY MODE		
01/14/2011		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

aopatent@fulbright.com

### Office Action Summary

**Application No.**

10/597,722

**Applicant(s)**

SKENE, WILLIAM G.

**Examiner**

SHANE FANG

**Art Unit**

1766

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 January 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-51 is/are pending in the application.
- 4a) Of the above claim(s) 4-28 and 40-51 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-32 is/are allowed.
- 6) ☒ Claim(s) 33-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-945)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 03/12/2007
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

The applicant has elected Group IV (claims 29-39) with no indication of traverse. Applicant's election of Group IV in the reply is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

This restriction is made FINAL. See previous action for the reasons of applying restriction.

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 33-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, claim 33 fails to define "X". For examination purpose, X is considered as a non-nucleophilic anion.

***Claim Rejections - 35 USC § 103***

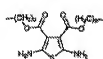
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lehn et al. (WO 2004003044) listed on IDS.

As to claims 36-39, Lehn (abs., claims 1-19, Pg. 6, Table1, 12:29-40, 13:20-35, 14:6-20, 22:4-30, 29: 7-10) discloses a polyimine prepared by reaction a diamine and a dialdehyde at a exact stoichiometric amount at 90-110°C for 12-24 hours catalyzed via trifluoroacetic acid (TFA) in solvent such as EtOH, wherein the diamine can be:



, or

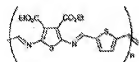


and the dialdehyde can be:

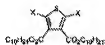


The disclosed reaction parameters overlap with the one described in instant 0109-0110 (105°C for 16 hours). Other conditions are the same (1:1 molar ratio for thiophene dicarbaldehyde: diaminothiophene, , TFA catalyzed in EtOH). It has been found that where claimed ranges overlap ranges disclosed by the prior art, a *prima facie* case of obviousness exists - see MPEP 2144.05. In light of this, one of ordinary skill in the art would obviously recognize reacting either of the above diamines with the above dialdehyde would inherently result in a polymer meeting the structures of claims 36-37 because of the monomer and reaction conditions.

Particular to claims 36-37, Lehn discloses a polymer of:

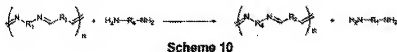


Particular to claim 38, Lehn discloses a diamine of:



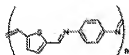
, wherein in  $X=\text{NH}_2$ . In light of this, one of ordinary skill in the

art would obviously recognize reacting this diamine with the above dialdehyde would inherently result in a polymer meeting the structures of claim 38. Furthermore, Lehn discloses a dialdehyde or diamine exchange reaction based on Scheme 9-10:



and polyimine

structures of:



. In light of this, one of ordinary skill in the art would

obviously recognize using this diamine to exchange the 1,4-phenylene group to meet the structure of claim 38.

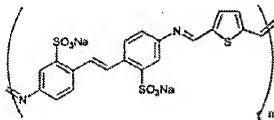
Lehn is silent on the polymer chain end group of "O" of the structures of claims 36-38. However, one of ordain skill in the art would obviously recognize the end group is controlled by the monomer ratio. Lehn's reaction condition meets the one of the

present invention, one of ordinary skill in the art would obviously recognize Lehn's polyimine structures would inherently have chain end groups of "O".

Lehn is silent on the number of repeating unit  $n$ . However, one of ordinary skill in the art would obviously recognize the disclosed polymer having  $n \geq 2$ , overlapping with the claimed range of 4-50k. It has been found that where claimed ranges overlap ranges disclosed by the prior art, a *prima facie* case of obviousness exists - see MPEP 2144.05.

Lehn is silent on the property of "electrically conducting". However, one of ordinary skill in the art would have expected the process (and the resulting product having conjugated structures) disclosed by Lehn to feature the same conductivity because Lehn obviously satisfies all of the material and chemical limitations of the instant invention-see MPEP 2112.01.

Particular to claim 39, Lehn discloses a polymer of the following structure that would meet the structure of claim 39:



Lehn is silent on the number of repeating unit  $n$ . However, one of ordinary skill in the art would obviously recognize  $n \geq 2$ , overlapping with the claimed range. Lehn is silent on the property of "electrically conducting". However, one of ordinary skill in the art

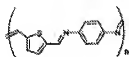
would have expected the process (and the resulting product) disclosed by Lehn to feature the same conductivity because Lehn obviously satisfies all of the material and chemical limitations of the instant invention-see MPEP 2112.01.

***Allowable Subject Matter***

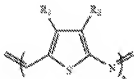
***Reasons for Allowance***

5. Claims 29-35 allowable over the closest prior art: Lehn et al. (WO 2004003044) listed on IDS, in proviso the 112 2<sup>nd</sup> issue is resolved for claims 33-35.

As to claim 29, Lehn discloses:



. However, claim 29 requires the polymer comprising the formula of:



and R<sup>1</sup> and R<sup>2</sup> can be H but n=4-50k. Lehn teaches away from the claimed structure.

Therefore, claim 29 is allowable together with its dependent claims 30-34 if the 112 2<sup>nd</sup> issue is resolved for claims 33-35.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHANE FANG whose telephone number is (571)270-7378. The examiner can normally be reached on Mon.-Thurs. 8 a.m. to 6:30 p.m. EST.. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sf

/RANDY GULAKOWSKI/  
Supervisory Patent Examiner, Art Unit 1766